

CLAIMS

I Claim:

1. A waste disposal device, comprising:
 - a housing defining a waste compartment for receiving enclosed waste;
 - a cartridge removably received in said housing and containing a length of flexible tubing arranged to receive waste therein, said cartridge being maintained in a stationary position when received in said housing;
 - a retention mechanism for holding a quantity of waste received in said tubing; and
 - a rotation mechanism for rotating the quantity of waste when held by said retention mechanism while said cartridge is stationary in order to twist said tubing and enclose the held quantity of waste, said compartment receiving the enclosed waste.
2. The device of claim 1, wherein said retention mechanism comprises a cylindrical member defining an interior, said cartridge being arranged around said cylindrical member such that said tubing passes through said interior of said cylindrical member and receives waste when in said interior of said cylindrical member.
3. The device of claim 1, wherein said retention mechanism defines a waste insertion chamber in which said tubing passes and receives waste when therein.
4. The device of claim 3, wherein said retention mechanism is arranged to impart downward movement to the waste when in said waste insertion chamber.

5. The device of claim 4, wherein said retention mechanism comprises fins extending into said waste insertion chamber, said fins being arranged to engage with said tubing receiving the waste.

6. The device of claim 5, wherein said retention mechanism further comprises a cylindrical member defining said waste insertion chamber in an interior thereof, said fins being formed on said cylindrical member.

7. The device of claim 6, wherein an inward edge of said fins is inclined at an angle of about 30° to a vertical axis of said cylindrical member.

8. The device of claim 1, wherein said rotation mechanism comprises a rotatable driving gear and said retention mechanism is arranged to convert rotation of said driving gear into rotation of the held quantity of waste.

9. The device of claim 8, wherein said retention mechanism comprises a cylindrical member defining a waste insertion chamber in which said tubing passes and receives waste when therein and a ring gear engaging with said driving gear.

10. The device of claim 9, wherein said retention mechanism further comprises fins arranged on said cylindrical member to extend into said waste insertion chamber, said fins being arranged to engage with said tubing receiving the waste.

11. The device of claim 10, wherein an inward edge of said fins is inclined at an angle of about 30° to a vertical axis of said cylindrical member to thereby impart downward movement of

the held quantity of waste upon rotation of said cylindrical member.

12. The device of claim 9, wherein said housing comprises a flange, said ring gear resting on and being rotatable relative to said flange.

13. The device of claim 12, further comprising a holding mechanism for holding said ring gear on said flange to thereby limit movement of said ring gear in a direction away from said flange.

14. The device of claim 8, wherein said rotation mechanism further comprises a drive motor having a rotatable output shaft coupled to said driving gear.

15. The device of claim 14, further comprising a switch for actuating said drive motor.

16. The device of claim 1, further comprising a limiting mechanism for limiting the rotation of said retention mechanism.

17. The device of claim 16, wherein said limiting mechanism comprises a normally closed switch arranged in said housing and a disengagement member arranged on said retention mechanism and closing said switch when in contact with said switch, whereby upon initial rotation of said retention mechanism, said disengagement member disengages from said switch and when said disengagement member re-contacts said switch, said switch is opened leading to cessation of rotation of said retention mechanism.

18. The device of claim 1, further comprising a removable cover mating with said housing, said cover including a swingable member having an open position in which a waste insertion opening is exposed and a closed position in which the waste insertion opening is closed.

19. The device of claim 1, further comprising a cartridge holding mechanism for holding said cartridge stationary during rotation of the held quantity of waste.

20. The device of claim 19, wherein said cartridge includes at least one cut-out portion, said cartridge holding mechanism including at least one engagement member arranged in said housing and engaging a respective one of said at least one cut-out portion of said cartridge.

21. The device of claim 20, wherein said housing includes a housing flange, said at least one engagement member being arranged on said housing flange.

22. The device of claim 19, wherein said housing includes a housing flange, said cartridge holding mechanism comprising at least one cartridge flange arranged on said cartridge and projections arranged on said housing flange, each of said at least one cartridge flange being received between a pair of said projections.

23. The device of claim 19, wherein said cartridge includes a notch, said cartridge holding mechanism comprising a rib having a step corresponding to said notch such that when said cartridge is positioned with said step in said notch, rotation of said cartridge is prevented.

24. The device of claim 1, wherein said housing further comprises protruding members extending into said compartment for preventing rotation of the enclosed waste in said compartment.

25. The device of claim 1, further comprising a variable power supply mechanism for selectively powering said rotation mechanism using AC mains power when said rotation mechanism is coupled to a power cord or using battery power when the AC mains power is disconnected.

26. The device of claim 1, further comprising a cover pivotally connected to said housing and a pushing mechanism arranged on said cover for urging waste into said retention mechanism upon pivoting of said cover into engagement with said housing.

27. The device of claim 26, wherein said pushing mechanism comprises a truncated, cone-shaped projection removably mounted on a lower surface of said cover.

28. The device of claim 26, wherein said pushing mechanism comprises a lug formed on a lower surface of said cover.

29. The device of claim 1, further comprising a support mechanism for supporting said cartridge in said housing.

30. The device of claim 29, wherein said support mechanism comprises a plurality of ribs.

31. The device of claim 1, wherein said housing comprises a flange, said retention mechanism resting on and being rotatable relative to said flange.

32. The device of claim 31, wherein said rotation mechanism comprises a rotatable driving gear and said retention mechanism is arranged to convert rotation of said driving gear into rotation of the held quantity of waste, said driving gear extending through an aperture formed in said flange into engagement with said retention mechanism.

33. The device of claim 32, wherein said retention mechanism comprises a frame defining a waste insertion chamber and a ring gear connected to said frame, said ring gear engaging with said driving gear.

34. The device of claim 1, wherein said retention mechanism defines a waste insertion chamber and comprises resilient springs extending into said waste insertion chamber.

35. The device of claim 1, wherein said retention mechanism comprises a frame defining a waste insertion chamber and a ring gear connected to said frame.

36. The device of claim 35, wherein said housing comprises a flange, said frame including a stepped portion resting on said flange, vertically extending walls, springs extending inward into said waste insertion chamber from said vertically extending walls and a planar portion extending between said stepped portion and said vertically extending walls

37. The device of claim 1, further comprising an on/off switch arranged on said housing to enable operation of said rotation mechanism.

38. The device of claim 1, further comprising a manually operated, momentary on switch arranged on said housing and coupled to said rotation mechanism such that depressing said momentary on switch causes activation of said rotation mechanism.

39. The device of claim 38, wherein said retention mechanism includes a disengagement member, further comprising a normally closed switch operated by said disengagement member such that depression and release of said momentary on switch causes said disengagement member to close said normally closed switch and allow continued activation of said rotation mechanism until re-engagement of said disengagement member with said normally closed switch which causes opening of said normally closed switch and cessation of activation of said rotation mechanism.

40. The device of claim 1, wherein said housing includes a perimeter wall and a base having an upward curved central region for urging enclosed waste insertions toward said wall.

41. The device of claim 1, wherein said cartridge comprises:

opposed substantially cylindrical inner and outer walls;
a lower wall extending between said inner and outer walls;
an upper wall having an inner edge spaced from said inner wall to define a ring-shaped opening, said tubing being arranged in a cavity defined by said inner, outer, lower and upper walls and passing out of said cavity through said ring-shaped opening;
and

first closing means for closing a front end of said tubing outside of said cavity.

42. The device of claim 41, wherein said first closing means comprises a metal clip or clasp attached to the front end of said tubing.

43. The device of claim 41, further comprising second closing means arranged in connection with at least one of said inner, outer, lower and upper walls for closing and sealing a rear end of said tubing.

44. The device of claim 1, wherein said cartridge comprises:

opposed substantially cylindrical inner and outer walls;
a lower wall extending between said inner and outer walls;
an upper wall having an inner edge spaced from said inner wall to define a ring-shaped opening, said tubing being arranged in a cavity defined by said inner, outer, lower and upper walls and passing out of said cavity through said ring-shaped opening;
and

first closing means arranged in connection with at least one of said inner, outer, lower and upper walls for closing and sealing a rear end of said tubing.

45. The device of claim 44, wherein said first closing means comprises score lines arranged on said upper wall to enable said upper wall to be folded about said score lines, attachment means arranged on said upper wall for attaching folded parts of said upper wall to one another, and slits arranged through said outer, inner and lower walls in alignment with said score lines.

46. The device of claim 45, wherein said attachment means comprises hook and loop fasteners.

47. The device of claim 45, wherein said attachment means comprises a tie and clasp stamped into said upper wall.

48. A waste disposal device, comprising:
a housing defining a waste compartment for receiving enclosed waste;
a cartridge removably received in said housing and containing a length of flexible tubing arranged to receive waste therein, said cartridge being maintained in a stationary position when received in said housing;
a retention mechanism for holding a quantity of waste received in said tubing, said retention mechanism comprising a cylindrical member defining a waste insertion chamber in which the quantity of waste is held, said cartridge being arranged around said cylindrical member such that said tubing passes through said waste insertion chamber and receives waste therein;
and
a rotation mechanism for rotating the quantity of waste when held by said retention mechanism while said cartridge is stationary in order to twist said tubing and enclose the held quantity of waste,
said compartment receiving the enclosed waste.

49. The device of claim 48, wherein said retention mechanism comprises fins formed on an inner surface of said cylindrical member and extending into said waste insertion chamber, said fins being arranged to engage with said tubing receiving the waste.

50. The device of claim 49, wherein an inward edge of said fins is inclined at an angle of about 30° to a vertical axis of said cylindrical member.

51. The device of claim 48, wherein said rotation mechanism comprises a rotatable driving gear and said retention mechanism is arranged to convert rotation of said driving gear into rotation of said cylindrical member.

52. The device of claim 51, wherein said retention mechanism further comprises a ring gear engaging with said driving gear.

53. The device of claim 52, wherein said housing comprises a flange, said ring gear resting on and being rotatable relative to said flange.

54. The device of claim 52, further comprising a holding mechanism for holding said ring gear on said flange to thereby limit movement of said ring gear in a direction away from said flange.

55. The device of claim 51, wherein said rotation mechanism further comprises a drive motor having a rotatable output shaft coupled to said driving gear.

56. A waste disposal device, comprising:
a housing defining a waste compartment for receiving enclosed waste;
a cartridge removably received in said housing and containing a length of flexible tubing arranged to receive waste therein, said cartridge being maintained in a stationary position when received in said housing;
a retention mechanism for holding a quantity of waste received in said tubing;

a rotation mechanism for rotating the quantity of waste when held by said retention mechanism while said cartridge is stationary in order to twist said tubing and enclose the held quantity of waste, said compartment receiving the enclosed waste; a cover pivotally connected to said housing; and a pushing mechanism arranged on said cover for urging waste into said retention mechanism upon pivoting of said cover into engagement with said housing.

57. The device of claim 56, wherein said pushing mechanism comprises a truncated, cone-shaped projection removably mounted on a lower surface of said cover.

58. The device of claim 56, wherein said pushing mechanism comprises a lug formed on a lower surface of said cover.

59. The device of claim 56, wherein said housing comprises a flange, said retention mechanism resting on and being rotatable relative to said flange.

60. The device of claim 59, wherein said rotation mechanism comprises a rotatable driving gear and said retention mechanism is arranged to convert rotation of said driving gear into rotation of the held quantity of waste, said driving gear extending through an aperture formed in said flange into engagement with said retention mechanism.

61. The device of claim 56, wherein said retention mechanism defines a waste insertion chamber and comprises resilient springs extending into said waste insertion chamber.

62. The device of claim 56, wherein said retention mechanism comprises a frame defining a waste insertion chamber and a ring gear connected to said frame, said ring gear engaging with said rotation mechanism.

63. The device of claim 62, wherein said housing comprises a flange, said frame including a stepped portion resting on said flange, vertically extending walls, springs extending inward into said waste insertion chamber from said vertically extending walls and a planar portion extending between said stepped portion and said vertically extending walls.